

What is claimed is:

1. A ball valve for fluids comprising a body provided with an inlet and an outlet and with an inner chamber in which a ball element having a main communication passageway passing  
5 through the ball element is rotatably received, the ball element being rotatable between an angular position at which the valve is fully closed, said passageway being disposed substantially transverse to the inlet and outlet and an angular position at which the valve is fully open,  
10 said main passageway being aligned with the valve inlet and outlet to constitute a communication therebetween, characterized in that the ball element comprises a secondary communication passageway of reduced section disposed laterally of said main communication passageway,  
15 the secondary passageway being designed to bring the valve inlet and outlet into communication with each other when said ball element is in a range of intermediate angular positions between said fully open and fully closed positions.
- 20 2. A valve as claimed in claim 1, characterized in that the secondary passageway comprises a plurality of paths for the fluid to generate an important pressure difference between the valve inlet and outlet when the ball element is in said range of angular positions.
- 25 3. A valve as claimed in claim 1, characterized in that the secondary passageway has a cross section extending at an angle around said main passageway.
4. A valve as claimed in claim 3, characterized in that said extension is limited to an angle included between  $45^{\circ}$

and 180° and, preferably, of approximately 90° around the central passageway.

5     5. A valve as claimed in claim 3, characterized in that the secondary passageway has a cross section extending symmetrically with respect to a median plane transverse to the rotation axis of the ball element.

10    6. A valve as claimed in claim 1, characterized in that it comprises a toroidal element received in a seat in said ball element and with an axis coincident with the axis of the main passageway to surround said main passageway, and provided with a plurality of holes disposed over a predetermined angular extension to define said secondary passageway.

15    7. A valve as claimed in claim 6, characterized in that the toroidal element is made up of a plurality of centrally bored discs, inserted and packed in the seat in said ball element and with a plurality of holes disposed over a pre-established angular extension around a central hole to define segments of said secondary passageway.

20    8. A valve as claimed in claim 7, characterized in that the holes of each disc are formed with a first diameter over a first length and with a second diameter different from the first one over a second length.

25    9. A valve as claimed in claim 7, characterized in that a pipe forming said main passageway at the inside thereof is inserted in the passageway formed by the central holes of the packed discs.

10. A valve as claimed in claim 9, characterized in that at least part of said pipe extends out of the packed discs.

11. A valve as claimed in claim 3, characterized in that a plug is inserted in said seat of the discs, which plug is bored at least in register with the secondary passageway and connects the curved wall of the ball element.

5 12. A valve as claimed in claim 10, characterized in that said plug has an outer surface connected with the surface of the ball element, that is designed to sealingly slide along the edge of a sealing element surrounding the opening of the corresponding inlet or outlet into the chamber.

10 13. A valve as claimed in claim 1, characterized in that it comprises further passageways for connection between the main passageway and secondary passageway.